UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM:

To: BeWanda Alexander

From: Clayton Myers, Entomologist **Date:** December 13, 2011

12-13-11

Subject: PRODUCT PERFORMANCE DATA EVALUATION RECORD

DP barcode:	390791
Decision no.:	449843
Submission no:	896915
Action code:	R310
Product Name:	Ortho Bug B Gon/Home Defense—RTS/Concentrate
EPA Reg. No or File Symbol:	239-ETRI
Formulation Type:	~~Bacmbeast Granules~~ RTS/Concentrate

Ingredients statement from the label with PC codes included: Bifenthrin, 0.30%, PC: 128825; Zeta-Cypermethrin, 0.075%, PC: 129064

Application rate(s) of product and each active ingredient (lbs. or gallons/1000 square feet or per acre as appropriate; and g/m^2 or mg/cm^2 as appropriate): 0.20 lbs/acre (1.5 oz/gal water)

I. Action Requested: Data was submitted to support residual claims on a new product.

II. Background: The registrant seeks to register a bifenthrin/zeta-cypermethrin combo product. The registrant is citing-all for efficacy claims and wishes to have all the claims present on the cited label. The registrant also proposes some additional speed of kill claims against fire ants, that are associated with the carrier in this new product. The registrant has submitted 2 efficacy studies for review to support these additional claims.

III. MRID Summaries: (Primary Reviews attached)

a. MRID 48496302

(1) Non-GLP

(2) Lab studies were conducted to support speed of kill/control claims against a number of pests of public health importance, applied at the label rate of 1.5 oz per gallon of water. Arenas consisting of metal pans (25.4 cm x 30.5 cm) with native soil on the bottom were used for exposure of pests to mimic outdoor conditions. Pests were introduced to treated (or untreated) arenas within minutes after treatment and observed for mortality, up to 24 hours after treatment. Observation times were ate 15, 30, 45, and 60 minutes, and after 2, 4, 6, and 24 hours. Times to achieve knockdown and mortality were recorded. There were 4 replicates per treatment, with 5 arthropods per replicate (20 arthropods for each treatment). Mean knockdown time and mean mortality were assessed using ANOVA and means were separated using the non-parametric Student-Newman-Keuls test (p=0.05).

(3) Authors conclude that efficacy is supported for a number of pests, including Carpenter and Harvester Ants, and Cockroaches, and propose a number of compartive claims based upon speed of activity compared to a product with bifenthrin alone.

(4) The study is acceptable to support the following claims:

Knockdown: Carpenter Ants, 30 min; Harvester Ants, 30 min; Oriental and German cockroaches, 30 min; American cockroaches, 2 h.

Killing: Carpenter Ants, 1h; Harvester Ants, 45 min; Oriental cockroaches, 2h; German cockroaches, 24 h.

Comparative claims against other products are not permitted.

b. MRID 48496303

(1) Non-GLP

(2) Results from previously conducted studies under field conditions were provided to show that a liquid formulation of bifenthrin provides outdoor residual control of arthropods in lawns, on ornamental and edible plants, and around the home perimeter. Various studies were summarized.

(3) Authors conclude that efficacy is supported for fire ants (4 weeks-90 days), Fleas (12 weeks), carpenter ants (90 days), cockroaches (90 days), Brown recluse spiders (91 days), House flies (90 days), and American Dog Ticks (102 days). Label claims can be identical to those approved for 279-9535

(4) The study is partially acceptable for claims proposed in this study volume, with the exception of 3 month claims for ants on lawns and claims for scorpions. Because scorpions claims and a number of other claims have previously been approved based upon data reviewed previously by the Agency, and are approved on substantially similar products, these claims can remain on the submitted product label, as noted.

IV. RECOMMENDATIONS:

(1) Labeling:

(a) What pests and site/pest combinations may be added as follows to the label based on the submitted or cited data?

Comparative speed of kill claims are supported by the data, but such comparative efficacy claims has not typically been approved. This decision is deferred to the product manager (PM). Speed of kill claims (explicitly stated with a time claim) would be acceptable for Carpenter Ants, Harvester Ants, and Cockroaches.

Kill claims against listed pests are supported by the submitted data and database for similar products, however not all listed claims are acceptable. See comments in marketing claims section below.

(b) What pests and site/pest combinations must be removed from the label?

None

(c) List changes to the directions for use:

None

(d) List changes to the optional marketing claims:

1. General 3 month (90 claims) are not supported for all pests. The marketing claims on page 14 related to 3 month control only apply to the following pests: Ants, fleas, cockroaches, brown recluse spiders (black widow must be excluded), house flies, scorpions, and American dog ticks (Deer ticks and black legged ticks must be excluded from the long residual claim). The claim must be foot noted to list these specific pests. The same footnote must also be applied to all residual claims, beginning at the bottom of page 14

through 15.

2. Compartive claims (such as 'faster acting formula versus previous Ortho Bug B Gon formula are supported by data but typically have not been permitted on these sorts of products. The decision regarding these claims' (page 14) acceptability is deferred to the Product Manager (PM).

TASK 2 DATA EVALUATION RECORD

STUDY TYPE: Product Performance

MRID 484963-02. Doskocil, J.P. Speed of Control of General Lawn and Home Invading Pests with a RTS/Concentrate Liquid Formulation Containing 0.3% Bifenthrin and 0.075% Zeta-Cypermethrin. February 15, 2011.

General Considerations for Efficacy of Invertebrate Control Agents (810.3000)

Product Name: Ortho Bug B Gon/Home Defense-RTS/Concentrate
EPA File Symbol: 239-ETRI
Decision number: 449843
DP number: 390791

Prepared for
Registration Division (7505P)
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, DC 20460

Prepared by
Summitec Corporation
Task Order No.: 2-24

Primary Reviewer:
Eric B. Lewis, M.S.

Signature: Eric B. Lewis
Date: SEP 30 2011

Secondary Reviewers:
Robert Ross, M.S.

Signature: Robert H. Ross
Date: SEP 30 2011

Robert Ross, M.S., Program Manager

Signature: Robert H. Ross
Date: SEP 30 2011

Quality Assurance:
Jennifer Goldberg, B.S.

Signature: Jennifer Goldberg
Date: SEP 30 2011

RECOMMENDED CLASSIFICATION: **Acceptable**

Disclaimer

This review may have been altered subsequent to the contractors' signatures above.

DATA EVALUATION RECORD

[Primary Reviewer's Name]

STUDY TYPE:	PRODUCT PERFORMANCE (810.3000)
MRID:	484963-02. Speed of Control of General Lawn and Home Invading Pests with a RTS/Concentrate Liquid Formulation Containing 0.3% Bifenthrin and 0.075% Zeta-Cypermethrin. Doskocil, J.P. 2011.
DP BARCODE:	390791
DECISION NO:	449843
SUBMISSION NO:	896915
SPONSOR:	The Scotts Company, P.O. Box 190, Marysville, OH 43040
TESTING FACILITY:	The Scotts Company, LLC, 14111 Scottslawn Road, Marysville, OH 43041
STUDY DIRECTOR:	R.K. Soufi, The Scotts Company, LLC
SUBMITTER:	J. Rothwell, Analyst, Federal Regulations, The Scotts Company, LLC
STUDY COMPLETED:	15/02/2011
CONFIDENTIALITY CLAIMS:	None.
GOOD LABORATORY PRACTICE:	A signed and dated GLP statement was included. The study was not conducted in accordance with 40 CFR Part 160.
TEST MATERIAL:	PRODUCT NAME: Ortho Bug B Gon/Home Defense-RTS/Concentrate EPA FILE SYMBOL: 239-ETRI ACTIVE INGREDIENT NAME: Bifenthrin; zeta-Cypermethrin CHEMICAL NAME: (2-Methyl{1,1'-biphenyl}-3-yl)methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate,{1.alpha.,3.alpha.(Z)}-(.+-.)-; Cyclopropanecarboxylic acid, 3-(2,2-dichloroethnyl)-2,2-dimethyl-, cyano(3-phenoxyphenyl)methyl ester

A.I. %: 0.300; 0.075

PC CODE: 128825; 129064

CAS NO.: 82657-04-3; 52315-07-8

FORMULATION TYPE: Liquid

PRODUCT APPLICATION RATE: For roses, ornamentals, vegetable gardens, melons, fruit trees: 1.5 oz/gal water, spray plants until thoroughly covered; for lawns: 0.75 – 1.5 oz/gal water/125 ft^2; for house foundations: 1.5 oz/gal water/16 linear ft (65 ft^2).

ACTIVE INGREDIENT APPLICATION RATE: Product is a liquid, density not provided.

PROPOSED LABEL MARKETING CLAIMS:

Starts to kill/killing/working within/in minutes/quick/fast for listed insects

Starts to kill [any combination of listed bugs] in minutes

Starts to kill/stops [any combination of listed bugs] in minutes

Goes to work in minutes

Faster-acting formula*

*versus previous Ortho Bug B Gon Max formula

Kills 4 times /4x faster*

*versus previous Ortho Bug B Gon Max formula†

†applies to/for oriental roaches/German roaches/lady beetles/western harvester ants

Starts activity within minutes

Fast acting formula

EPA REQUESTS: [EPA WILL ADD DIRECTIVES HERE]

STUDY REVIEW

Study Number/Title: (if more than one study is provided in the MRID)

Purpose: The study was conducted to support speed of efficacy claims against general lawn and home invading pests.

MATERIALS AND METHODS

Test Location: Marysville, OH

Test Material: The test materials were a new RTS/concentrate liquid formulation containing 0.3% bifenthrin plus 0.075% zeta-cypermethrin as active ingredients, and a previous RTS/concentrate liquid formulation containing 0.3% bifenthrin only. The new formulation test material contains the same active ingredients, in the same concentrations, as the active ingredients in Ortho Bug B Gon/Home Defense-RTS/Concentrate. The older formulation is apparently equivalent to Ortho Bug B Gon Max. The appropriate test material was applied to the test arena at a rate of 0.295 mL diluted in 24.98 mL of water (equivalent to the label rate of 1.5 oz/gal water).

Test Species Name, Life Stage, Sex and Age: Florida carpenter ant (*Camponotus floridanus*), adults, sex not provided; western harvester ant (*Pogonomyrmex occidentalis*), adults, sex not provided; convergent lady beetle (*Hippodamia convergens*), adults, sex not provided; brown dog tick (*Rhipicephalus sanguineus*), adults, sex not provided; cricket (*Acheta domesticus*), adults, sex not provided; oriental cockroach (*Blatta orientalis*) adults, sex not provided; German cockroach (*Blattella germanica*), adults, sex not provided; American cockroach (*Periplaneta americana*), adults, sex not provided.

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted: The test was conducted using a completely randomized design. The test arenas were 25.4 x 30.5 cm aluminum pans with 366.96 g of native soil distributed evenly across the bottom. Each arena was treated once with 0.295 mL of the appropriate test material diluted with 24.98 mL of water (equivalent to the label rate of 1.5 oz/gal). The method of application was not specified. Untreated test arenas served as the control. Within minutes after treatment, five adults of the same test species were introduced into each arena, which was then covered with plexiglass. The insects were observed for mortality until 100% mortality occurred, or for up to 24 hours. Observation times were at 15, 30, 45, and 60 minutes, and after two four, six, and 24 hours. The times to achieve knockdown and mortality were recorded.

List the treatments including untreated control: RTS/concentrate liquid formulation of 0.3% bifenthrin plus 0.075% zeta-cypermethrin, 0.295 mL diluted with 24.98 mL of water/arena; RTS/concentrate liquid formulation of 0.3% bifenthrin, 0.295 mL diluted with 24.98 mL of water/arena; untreated control.

Number of replicates per treatment: 4

Number of individuals per replicate: 5

Length of exposure to treatment: Up to 24 hours.

Experimental conditions: Not provided.

Data or endpoints that were to be collected/recorded: Knockdown time, mortality

Data Analysis: Mean knockdown time and mean mortality were analyzed using ANOVA. Mean comparisons were performed using the Student-Newman-Keuls test (p=0.05).

Table 2: Time to achieve mortality with 0.3% Bifenthrin + 0.075% Zeta-Cypermethrin liquid for all species tested. Values are represented as percentage mortality at the observation time. Values followed by a different letter are statistically different from their control counterpart, Student-Newman-Keuls at P=0.05. Controls are directly under the treated values for each species. Missing observation times represented by – in the table.

Treatment	Minutes After Introduction				Hours After Introduction			
	15	30	45	60	2	4	6	24
FL Carpenter Ant	0 a	0 a	80 a	100 a	100 a	100 a	100 a	100 a
Control	0 a	0 a	0 b	0 b	0 b	0 b	0 b	0 b
W. Harvester Ant	0 a	0 a	90 a	100 a	100 a	100 a	100 a	100 a
Control	0 a	0 a	0 b	0 b	0 b	0 b	0 b	0 b
Brown Dog Tick	0 a	0 a	-	0 a	40 a	56 a	56 a	66 a
Control	0 a	0 a	-	0 a	0 b	0 b	0 b	0 b
Lady Beetle	26 a	26 a	-	30 a	96 a	96 a	100 a	100 a
Control	0 b	0 b	-	0 b	0 b	0 b	0 b	6 b
Cricket	0 a	0 a	0 a	0 a	6 a	6 a	10 a	36 a
Control	0 a	0 a	0 a	0 a	0 a	0 a	0 a	0 b
Oriental Roach	0 a	10 a	40 a	70 a	96 a	100 a	100 a	100 a
Control	0 a	0 a	0 b	0 b	6 b	6 b	10 b	16 b
German Roach	0 a	0 a	0 a	0 a	10 a	40 a	80 a	96 a
Control	0 a	0 a	0 a	0 a	0 a	0 b	0 b	0 b
American Roach	0 a	0 a	0 a	0 a	0 a	0 a	0 a	6 a
Control	0 a	0 a	0 a	0 a	0 a	0 a	0 a	0 a

The time to achieve knockdown with the 0.3% bifenthrin test material is given in Table 3. Depending on the species, knockdown occurred within 15 minutes to two hours. After one hour, knockdown was seen for each ant species, lady beetles, crickets, oriental cockroaches, and German cockroaches. After two hours, knockdown was seen in the brown dog tick and American cockroaches.

Table 3: Time to achieve knockdown with 0.3% Bifenthrin liquid for all species tested. Values are represented as percentage knocked down at the observation time. Values followed by a different letter are statistically different from their control counterpart, Student-Newman-Keuls at P=0.05. Controls are directly under the treated values for each species. Missing observation times represented by – in the table.

Treatment	Minutes After Introduction				Hours After Introduction			
	15	30	45	60	2	4	6	24
FL Carpenter Ant	26 a	90 a	100 a	100 a	100 a	100 a	100 a	100 a
Control	0 b	0 b	0 b	0 b	0 b	0 b	0 b	0 b
W. Harvester Ant	0 a	60 a	96 a	100 a	100 a	100 a	100 a	100 a
Control	0 a	0 b	0 b	0 b	0 b	0 b	0 b	0 b
Brown Dog Tick	0 a	0 a	-	0 a	26 a	66 a	66 a	80 a
Control	0 a	0 a	-	0 a	0 b	0 b	0 b	0 b
Lady Beetle	96 a	100 a	-	90 a	90 a	100 a	100 a	100 a
Control	0 b	0 b	-	0 b	0 b	0 b	0 b	6 b
Cricket	0 a	0 a	30 a	46 a	90 a	100 a	100 a	100 a
Control	0 a	0 a	0 b	0 b	0 b	0 b	0 b	0 b
Oriental Roach	0 a	16 a	16 a	16 a	80 a	100 a	100 a	100 a
Control	0 a	0 a	0 a	0 a	6 b	6 b	10 b	16 b
German Roach	6 a	6 a	40 a	70 a	96 a	96 a	96 a	100 a
Control	0 a	0 a	0 b	0 b	0 b	0 b	0 b	0 b
American Roach	0 a	0 a	0 a	0 a	30 a	86 a	86 a	76 a
Control	0 a	0 a	0 a	0 a	0 a	0 b	0 b	0 b

The time to achieve mortality with the 0.3% bifenthrin test material is given in Table 4. Depending on the species mortality occurred within 30 minutes to 24 bours. By 24 hours, some level of mortality was seen for all species except American cockroaches.

Table 4: Time to achieve mortality with 0.3% Bifenthrin liquid for all species tested. Values are represented as percent mortality at the observation time. Values followed by a different letter are statistically different from their control counterpart, Student-Newman-Keuls at P=0.05. Controls are directly under the treated values for each species. Missing observation times represented by – in the table.

Treatment	Minutes After Introduction				Hours After Introduction			
	15	30	45	60	2	4	6	24
FL Carpenter Ant	0 a	0 a	70 a	100 a	100 a	100 a	100 a	100 a
Control	0 a	0 a	0 b	0 b	0 b	0 b	0 b	0 b
W. Harvester Ant	0 a	0 a	0 a	50 a	46 a	100 a	100 a	100 a
Control	0 a	0 a	0 a	0 b	0 b	0 b	0 b	0 b
Brown Dog Tick	0 a	0 a	-	0 a	6 a	56 a	50 a	70 a
Control	0 a	0 a	-	0 a	0 a	0 b	0 b	0 b
Lady Beetle	0 a	36 a	-	40 a	36 a	40 a	60 a	80 a
Control	0 a	0 a	-	0 a	0 b	0 b	0 b	6 b
Cricket	0 a	0 a	0 a	0 a	0 a	6 a	6 a	56 a
Control	0 a	0 a	0 a	0 a	0 a	0 a	0 a	0 b
Oriental Roach	0 a	0 a	0 a	0 a	0 a	6 a	6 a	100 a
Control	0 a	0 a	0 a	0 a	6 a	6 a	10 a	16 b
German Roach	0 a	0 a	0 a	0 a	0 a	20 a	56 a	96 a
Control	0 a	0 a	0 a	0 a	0 a	0 a	0 b	0 b
American Roach	0 a	0 a	0 a	0 a	0 a	0 a	0 a	0 a
Control	0 a	0 a	0 a	0 a	0 a	0 a	0 a	0 a

The time for each of the test materials to achieve acceptable mortality to lady beetles, western harvester ant, oriental cockroaches, and German cockroaches are given in Table 5. The new formulation containing bifenthrin + zeta-cypermethrin achieved acceptable mortality of these pests at least four times faster than the older formulation containing bifenthrin alone.

Table 5. A comparison of the time needed to achieve acceptable mortality by product for lady beetle, western harvester ant, and Oriental and German cockroaches.

Treatment	Insect Treated			
	Lady Beetle	Western Harvester Ant	Oriental Cockroach	German Cockroach
Bifenthrin + Zeta-cypermethrin	2 hrs	45 min.	2 hrs	6 hrs
Bifenthrin	24 hrs	4 hrs	24 hrs	24 hrs
Control	n/a	n/a	n/a	n/a

Study Author's Conclusions

The study author concluded that the new formulation test material containing bifenthrin + zeta-cypermethrin achieved knockdown within 60 minutes, and some degree of mortality within 24 hours, for all the insect species tested. The new formulation also produced an acceptable level of mortality four times faster than the older formulation for lady beetles, western harvester ants, oriental cockroaches, and German cockroaches.

Reviewer's Conclusions

The test validated the Ortho Bug B Gon/Home Defense-RTS/Concentrate label claims for Florida carpenter ants, western harvester ants, brown dog ticks, lady beetles, crickets, oriental roaches, German roaches, and American roaches.

The test also validated the label claim of "kills 4 times faster versus previous Ortho Bug B Gon Max formula for oriental roaches/German roaches/lady beetles/western harvester ants."

Reviewer Recommendations

The study is acceptable. The reviewer notes that the registrant submitted this study under OPPTS guideline 810.3000. Guideline 810.3500 (Premises Treatments) is more appropriate.

RESULTS

Were the raw data included? Yes.

Protocol amendments and deviations: Not reported.

Describe and report experimental results in the untreated controls and treatments.

The time to achieve knockdown with the 0.3% bifenthrin + 0.075% zeta-cypermethrin test material is given in Table 1. Depending on the species, knockdown occurred within 15 to 45 minutes. All species except the brown dog tick were 80% knocked down within 60 minutes.

Table 1: Time to achieve knockdown with 0.3% Bifenthrin + 0.075% Zeta-Cypermethrin liquid for all species tested. Values are represented as percentage knocked down at the observation time. Values followed by a different letter are statistically different from their control counterpart, Student-Newman-Keuls at P=0.05. Controls are directly under the treated values for each species. Missing observation times represented by – in the table.

Treatment	Minutes After Introduction				Hours After Introduction			
	15	30	45	60	2	4	6	24
FL Carpenter Ant	70 a	90 a	100 a	100 a	100 a	100 a	100 a	100 a
Control	0 b	0 b	0 b	0 b	0 b	0 b	0 b	0 b
W. Harvester Ant	26 a	100 a	100 a	100 a	100 a	100 a	100 a	100 a
Control	0 a	0 b	0 b	0 b	0 b	0 b	0 b	0 b
Brown Dog Tick	0 a	10 a	-	20 a	50 a	60 a	76 a	86 a
Control	0 a	0 a	-	0 a	0 b	0 b	0 b	0 b
Lady Beetle	100 a	100 a	-	100 a	100 a	100 a	100 a	100 a
Control	0 b	0 b	-	0 b	0 b	0 b	0 b	6 b
Cricket	50 a	90 a	100 a	100 a	100 a	100 a	100 a	100 a
Control	0 b	0 b	0 b	0 b	0 b	0 b	0 b	0 b
Oriental Roach	6 a	90 a	100 a	100 a	100 a	100 a	100 a	100 a
Control	0 a	0 b	0 b	0 b	6 b	6 b	10 b	16 b
German Roach	16 a	90 a	90 a	100 a	100 a	100 a	100 a	100 a
Control	0 a	0 b	0 b	0 b	0 b	0 b	0 b	0 b
American Roach	0 a	0 a	20 a	80 a	100 a	100 a	100 a	100 a
Control	0 a	0 a	0 a	0 b	0 b	0 b	0 b	0 b

The time to achieve mortality with the 0.3% bifenthrin + 0.075% zeta-cypermethrin test material is given in Table 2. All the treated groups experienced some mortality within 24 hours of treatment.

TASK 2 DATA EVALUATION RECORD

STUDY TYPE: Product Performance

MRID 484963-03. Residual Control of Outdoor Crawling Arthropods with Bifenthrin Applied at 0.2 Pounds per Acre. April 19, 2011.

General Considerations for Efficacy of Invertebrate Control Agents (810.3000)
Soil Treatments for Imported Fire Ants (810.3100)
Premises Treatments (810.3500)

Product Name: Ortho Bug B Gon/Home Defense-RTS/Concentrate
EPA File Symbol: 239-ETRI
Decision number: 449843
DP number: 390791

Prepared for
Registration Division (7505P)
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, DC 20460

Prepared by
Summitec Corporation
Task Order No.: 2-24

Primary Reviewer:
Eric B. Lewis, M.S.

Signature: Eric B. Lewis
Date: SEP 30 2011

Secondary Reviewers:
Robert Ross, M.S.

Signature: Robert H. Ross
Date: SEP 30 2011

Robert Ross, M.S., Program Manager

Signature: Robert H. Ross
Date: SEP 30 2011

Quality Assurance:
Jennifer Goldberg, B.S.

Signature: Jennifer Goldberg
Date: SEP 30 2011

RECOMMENDED CLASSIFICATION: **Partially acceptable**

Disclaimer

This review may have been altered subsequent to the contractors' signatures above.

DATA EVALUATION RECORD

[Primary Reviewer's Name]

STUDY TYPE:	PRODUCT PERFORMANCE (810.3000, 810.3100, 810.3500)
MRID:	484963-03. Residual Control of Outdoor Crawling Arthropods with Bifenthrin Applied at 0.2 Pounds per Acre. Doskocil, J.P. 2011.
DP BARCODE:	390791
DECISION NO:	449843
SUBMISSION NO:	896915
SPONSOR:	The Scotts Company, 14111 Scottslawn Road, Marysville, OH 43041
TESTING FACILITY:	"Various"
STUDY DIRECTOR:	R.K. Soufi, The Scotts Company, LLC
SUBMITTER:	J. Rothwell, Analyst, Federal Regulations, The Scotts Company, LLC
STUDY COMPLETED:	19/04/2011 (Report date)
CONFIDENTIALITY CLAIMS:	None.
GOOD LABORATORY PRACTICE:	A signed and dated GLP statement was included. The study was not conducted in accordance with 40 CFR Part 160.
TEST MATERIAL:	PRODUCT NAME: Ortho Bug B Gon/Home Defense-RTS/Concentrate EPA FILE SYMBOL: 239-ETRI ACTIVE INGREDIENT NAME: Bifenthrin; zeta-Cypermethrin CHEMICAL NAME: (2-Methyl{1,1'-biphenyl}-3-yl)methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate,{1.alpha.,3.alpha.(Z)}-(.+-.)-; Cyclopropanecarboxylic acid, 3-(2,2-dichloroethnyl)-2,2-dimethyl-, cyano(3-

phenoxyphenyl)methyl ester

A.I. %: 0.300; 0.075

PC CODE: 128825; 129064

CAS NO.: 82657-04-3; 52315-07-8

FORMULATION TYPE: Liquid

PRODUCT APPLICATION RATE: For roses, ornamentals, vegetable gardens, melons, fruit trees: 1.5 oz/gal water, spray plants until thoroughly covered (one 32 oz bottle will treat 2700 ft^2); for lawns: 0.75 – 1.5 oz/gal water/125 ft^2; for house foundations: 1.5 oz/gal water/16 linear ft (65 ft^2).

ACTIVE INGREDIENT APPLICATION RATE: Product is a liquid, density not provided.

PROPOSED LABEL MARKETING CLAIMS:

Broad spectrum claims:

Provides residual control for up to 6 weeks.

Kills/controls [insects] [for up to] ([4,5,6] weeks/[1,2] months) [outdoors]

Up to 6 week protection

One application…[up to 6 week control]

Contains bifenthrin, a long-lasting insecticide that provides contact and residual control of many hard-to-kill sucking and chewing insects for up to [4,5,6,7,8] weeks.

Provides residual control*

*for listed insects.

3-Month Claims:

Provides residual control for [up to] 3 months [outdoors]*

Creates/provides a 3 month bug barrier*

Kills/control/protects [insects] [for] [up to] 3 months [outdoors]*

[One application] [up to] 3 month control/protection [outdoors]*

[One application] keeps listed bugs away/out for [up to] 3 months*

Kills listed insects [outdoors] for [up to] 3 months*

*Applies to/for [insert any combination of the following listed insects: spiders (excluding black widow, brown recluse, hobo), argentine, carpenter, fire ants, roaches/palmetto bugs/water bugs, striped scorpions, fleas, crickets, grasshoppers, pillbugs, and ticks]

6-Month Claims:

Up to 6 month control [protection] outdoors*

Kills [controls] [protects] [for] up to 6 months outdoors*

Kills listed bugs [indoors] [and] [outdoors] for 6 months*

*Applies to [for] spiders (excluding black widow, brown recluse, hobo)

Outdoor perimeter claims:

One application keeps listed bugs out for an entire month*

Keeps listed bugs away for up to 1 month*

One application keeps listed insects [any combination of listed insects] out for up to 1 month*

*Applies to mosquitoes, fleas, cockroaches and flies

Long lasting control of fire ants

One application lasts [protects] [for up to]([4,5,6…12] weeks/[1,2,3] months) [against fire ants]

Kills fire ants on contact [and lasts/keeps killing] [for up to](4,5,6…12] weeks/[1,2,3] months

[Kills fire ants] [and] [prevents/controls new mounds from forming] [for up to] ([4,5,6…12] weeks)/[1,2,3] months)

Plant and vegetable claims:

Guards/defends/shields/safeguards/protects [prevents attacks against] flowers and edibles from listed bugs for [up to 2,3,4,5,6]] weeks.*

Guards/defends/shields/safeguards/protects [prevents attacks against] fruit and vegetables from listed bugs for [up to 2,3,4,5,6]] weeks.*

Guards/defends/shields/safeguards/protects gardens and landscapes from listed bugs for [up to [2,3,4,5,6]] weeks.*

*2 weeks applies to aphids, whiteflies, flea beetles, pea weevil, potato leaf hopper, cabbage looper, mites.

*4 weeks applies to pea weevil, potato leaf hopper, cabbage looper, mites.

*Up to 6 weeks applies to cabbage looper, mites.

EPA REQUESTS: [EPA WILL ADD DIRECTIVES HERE]

STUDY REVIEW

Study Number/Title: (if more than one study is provided in the MRID)

Purpose: Results from previously-conducted studies under field conditions were provided to show that a liquid formulation of bifenthrin provides outdoor residual control of arthropods 1) in a lawn setting, 2) on ornamental and edible plants, and 3) around the home perimeter.

MATERIALS AND METHODS

Test Location: For lawn tests, not provided; for ornamental and garden plant tests, not provided or Valley Center, CA; for home perimeter tests, not provided.

Test Material: The test materials were liquid formulations of bifenthrin (most of them registered products) applied at concentrations up to 0.2 lb a.i./acre, which the registrant stated was equivalent to the label application rate for Ortho Bug B Gon/Home Defense-RTS/Concentrate.

Test Species Name, Life Stage, Sex and Age:

Tests for lawns:

Lasius spp., fire ant, chinch bug, S. chinch bug, pillbug, black turfgrass Ataenius, crickets/grasshoppers, fleas, striped-tail scorpion; scientific name, life stage, and sex not provided.

Tests for ornamental and garden plants:

Cabbage looper (*Trichoplusia ni*), mites (*Tetranychus urticae*), potato leaf hopper (scientific name not provided), pea weevil (scientific name not provided), aphid (*Aphis* spp.), white flies (Aleyrodidae), flea beetle (*Chaetocnema confinis*); life stage and sex not provided.

Tests for home perimeter:

Argentine ant, carpenter ant, red imported fire ant, American cockroach, German cockroach, oriental cockroach, black house spider, daddy-long-legs, longjaw spider, brown recluse, crickets/grasshoppers, fleas, house flies, striped tail scorpion, pillbug, American dog tick; scientific name, life stage, and sex not provided.

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted:

Tests for lawns:

The tests were conducted on soil, turfgrass, mulch, and a porous substrate. Bifenthrin was applied at rates of 0.05 to 0.2 lb/A. No additional details were provided in MRID 484963-03.

Tests for ornamental and garden plants:

The tests were conducted on broccoli, strawberry, edibles (not defined), bell pepper, strawberry, and eggplant. No information was provided for the tests on edibles.

For the test of cabbage looper on broccoli, plants in a shade house received a single spray treatment of the test material on the upper and lower leaf surfaces until the leaves were wet. The

plants were monitored for cabbage loopers for up to 72 days after treatment. Additional details on how the experiment was conducted were not provided.

For test the test of mites on strawberries, the plants were monitored for mites for up to 49 days after treatment. Additional details on how the experiment was conducted were not provided.

For tests of aphids on strawberries, aphids on bell peppers, whiteflies on bell peppers, and whiteflies on eggplant, plants in one-gallon pots in a randomized complete block were infested with the appropriate test insect in the greenhouse and then transferred outside for a single spray treatment of the test material until the leaves were wet. The number of the test insect on one leaf was determined on test days -1, 4, 7, and 14. No additional details were provided.

For tests of flea beetles on eggplant, the plants were monitored for flea beetles for up to 16 days after treatment. Additional details on how the experiment was conducted were not provided.

Tests for home perimeter:

The tests were conducted on soil, wood, repellent wood, cement, ceramic tile, stainless steel, vinyl, mulch, soil, porous, non-porous, and other substrates. No additional details were provided in MRID 484963-03.

List the treatments including untreated control:

Tests for lawns:

Bifenthrin, applied at 0.05-0.2 lb/A. No additional details were provided.

Tests for ornamental and garden plants:

Bifenthrin, applied at 0.025-0.2 lb/A. Each test included an untreated control.

Tests for home perimeter:

Bifenthrin, applied at 0.08-0.2 lb/A. No additional details were provided.

Number of replicates per treatment:

Tests for lawns:

Not provided.

Tests for ornamental and garden plants:

For cabbage looper on broccoli, mites on strawberry, whiteflies on eggplant and bell pepper, and flea beetle on eggplant, 4; for aphid on bell pepper and strawberry, 3; for edibles, not provided.

Tests for home perimeter:

Not provided.

Number of individuals per replicate:

Tests for lawns:

Not provided.

Tests for ornamental and garden plants:

1.

Tests for home perimeter:

Not provided.

Length of exposure to treatment:

Tests for lawns:

At least 6 weeks.

Tests for ornamental and garden plants:

Cabbage looper on broccoli, up to 72 days.

Mites on strawberries, up to 49 days.

Aphids on strawberries, aphids on bell peppers, whiteflies on bell peppers, and whiteflies on eggplant, up to 14 days.

Flea beetles on eggplant, up to 16 days.

Tests for home perimeter:

90-315 days.

Experimental conditions:

Tests for lawns: Not provided.

Tests for ornamental and garden plants: Not provided.

Tests for home perimeter: Not provided.

Data or endpoints that were to be collected/recorded:

Tests for lawns: Percent control

Tests for ornamental and garden plants: Number of live pests.

Tests for home perimeter: Percent control.

Data Analysis:

Tests for lawns: Not provided.

Tests for ornamental and garden plants: ANOVA. Means were compared using Student-Newman-Keuls (p=0.05).

Tests for home perimeter: Not provided.

RESULTS

Were the raw data included?

Tests for lawns: No.

Tests for ornamental and garden plants: for cabbage looper on broccoli, mites on strawberry, aphid on bell pepper and strawberry, white flies on eggplant and bell pepper, and flea beetle on eggplant, yes; for edibles, no.

Tests for home perimeter: No.

Protocol amendments and deviations: Not reported.

Describe and report experimental results in the untreated controls and treatments.

Results of the tests for lawns are summarized in Table 1.

TABLE 1. Residual insect control for the lawn.

Use Site	Arthropod	Test Reference	EPA Reg.	Substrate	Bifenthrin Rate	Length of Residual	Control
Lawn	Lasius spp	PD974711	239-2685	Soil	0.1 & 0.2 #/A	>41 WAT*	100%
	Fire Ant		239-2685	Soil, Turfgrass	0.2 #/A**	>4 WAT	100%
	Chinch Bug	PD950463; PD950454; PD950652	239-2685	Turfgrass	0.1 & 0.2 #/A	>9 WAT	97%
	S. Chinch Bug	PD975413	239-2685	Turfgrass	0.05 - 0.2 #/A	>11 WAT	95%
	Billbug	PD975631	239-2685	Turfgrass	0.2 #/A	>5 WAT	100%
	Black Turfgrass Ataenius	PD975622	239-2685	Soil	0.05 - 0.1 #/A	>9 WAT	99%
	Crickets/Grasshoppers	MRID 47086001	279-3240-239	Mulch	0.2 #/A	>12 WAT	94%
	Fleas	MRID 47086001, 46393501	279-3206	Porous	0.2 #/A	12 WAT	100%
	Scorpions-Striped Tail	MRID 46508101	279-3168	Soil	0.2 #/A	12 WAT	80%

*WAT- Weeks After Treatment

** #/A - pounds active ingredient per acre

Results of the tests for ornamental and garden plants are summarized in Table 2.

TABLE 2. Residual insect control for ornamental and garden plants.

Use Site	Arthropod	Test Reference	EPA Reg.	Substrate	Bifenthrin Rate	Length of Residual	Percent Control
Garden/Plant	Cabbage Looper	05CA102O01	Appendix A	Broccoli	0.2#/A**	>6 WAT*	97
	Mites	05CA102O02	Appendix A	Strawberry	0.2 #/A	>6 WAT	98
	Potato Leaf Hopper	PD977121	239-2685	Edibles	0.025 #/A	>5 WAT	100
	Pea Weevil	1999NAS12A	239-2685	Edibles	0.04 #/A	>4 WAT	86
	Aphid	02CAL065, 02CAL061	Appendix A	Bell Pepper, Strawberry	0.2 #/A	>2 WAT	100
	White Flies	02CAL096, 02CAL064	Appendix A	Eggplant, Bell Pepper	0.2 #/A	>2 WAT	100
	Flea Beetle	03CA102O020	Appendix A	Eggplant	0.2 #/A	>2 WAT	83

*WAT- Weeks After Treatment

** #/A - pounds active ingredient per acre

Results of the tests for home perimeter are summarized in Table 3.

TABLE 3. Residual insect control for the home perimeter.

Arthropod		Test Reference	EPA Reg.	Substrate	Bifenthrin Rate	Length of Residual	Percent Control
Ants	Argentine	PDM 085-08	239-2687	soil	0.2 #/A	126 Days	100%
	Carpenter	04DLR050 PDM074-05	279-3240	Pine Board	0.2 #/A	90 Days	99%
	Red Imported Fire (Foragers)	MRID: 46180801, 46809101	239-2687	Plain Wood	0.2 #/A	90 Days	100.00%
				Repellent Wood	0.2 #/A	90 Days	100%
				Cement	0.2 #/A	90 Days	95%
Cockroaches	American	MRID 46371601	279-3206	Ceramic Tile	0.2 #/A	90 Days	100%
	German	MRID 46371601		Ceramic Tile		90 Days	100%
				Stainless Steel		90 Days	100%
		MRID 448919-03	279-3206	Vinyl	0.08-0.2 #/A	210 Days	98-100%
	Oriental	MRID 47086001, 46371601	279-3206	Ceramic Tile	0.2 #/A	90 Days	95%
Spiders	Black House	PDM060-040	279-3240-239	Variable-Homes	0.17 #/A	315 Days	90%
	Daddy-Long-legs	PDM060-040					
	Longjaw	PDM060-040					
	Brown Recluse				0.2 #/A	91 Days	100%
Crickets/Grasshoppers		MRID 47086001	279-3240-239	Mulch	0.2 #/A	92 Days	94%
Fleas		MRID 47086001	279-3206	Porous	0.2 #/A	90 Days	100%
House Flies		MRID 47086001	279-3240	Ceramic	0.2 #/A	90 Days	93%
		MRID 47086001		Non-Porous (Pine)	0.2 #/A	90-120 Days	97% & 83%
Scorpions-Striped Tail		MRID 46508101	279-3168	Soil	0.2 #/A	90 Days	80%
Pillbugs			279-3240		0.2 #/A	90 Days	89%
American Dog Tick			279-3240		0.2 #/A	102 Days	97%

** #/A - pounds active ingredient per acre

Study Author's Conclusions

The study author concluded that since bifenthrin at the same or lesser rates than those recommended on the Ortho Bug B Gon/Home Defense-RTS/Concentrate label was efficacious, the same performance can be expected with Ortho Bug B Gon/Home Defense-RTS/Concentrate.

Reviewer's Conclusions

According to MRID 484963-03, the registrant is requesting approval of the following claims for lawns:

Provides residual control of many hard-to-kill sucking and chewing insects for up to 9 weeks.*
*For chinch bugs, black turfgrass Ataenius, crickets, grasshoppers, fleas, scorpions.

[The reviewer notes that the product label for Ortho Bug B Gon/Home Defense-RTS/Concentrate only claims control for up to 8 weeks.]

Kills listed insects for up to 3 months*
*For ants, crickets, grasshoppers, fleas, scorpions.

The test results in Table 1 indicate that these claims are met, with the exception of the 3-month claim for ants. While only results, and no details, of the tests supporting these claims were provided, the registrant indicates that the tests were submitted previously to support products that are now registered. Since these tests would have been found acceptable in order for those products to be registered, the reviewer finds these results to be acceptable.

According to MRID 484963-03, the registrant is requesting approval of the following claims for ornamental and garden plants:

6-Week Claims:

Guards/defends/shields/safeguards/protects/prevents attacks against gardens and landscapes from bugs for up to 6 weeks*

Guards/defends/shields/safeguards/protects/prevents attacks against fruits and vegetables from bugs for up to 6 weeks*

Guards/defends/shields/safeguards/protects/prevents attacks against flowers and edibles from bugs for up to 6 weeks*

Up to 6 weeks protection*

One application…up to 6 week control*

Provides residual control for up to 6 weeks*
*Applies to cabbage looper and mites

4-Week Claims:

Guards/defends/shields/safeguards/protects/prevents attacks against gardens and landscapes from bugs for up to 4 weeks*

Guards/defends/shields/safeguards/protects/prevents attacks against fruits and vegetables from bugs for up to 4 weeks*

Guards/defends/shields/safeguards/protects/prevents attacks against flowers and edibles from bugs for up to 4 weeks*

Up to 4 weeks protection*

One application…up to 4 week control*

Provides residual control for up to 4 weeks*
*Applies to cabbage looper, mites, pea weevil, potato leaf hopper

2-Week Claims:

Guards/defends/shields/safeguards/protects/prevents attacks against gardens and landscapes from bugs for up to 2 weeks*

Guards/defends/shields/safeguards/protects/prevents attacks against fruits and vegetables from bugs for up to 2 weeks*

Guards/defends/shields/safeguards/protects/prevents attacks against flowers and edibles from bugs for up to 2 weeks*

Up to 2 weeks protection*

One application…up to 2 week control*

Provides residual control for up to 2 weeks*
*Applies to aphids, cabbage looper, flea beetles, mites, pea weevils, potato leaf hopper, and whiteflies.

The test results in Table 2 indicate that these claims are met only for the tests conducted with edibles. While only results, and no details, of the tests supporting the claims for potato leaf hopper and pea weevil on edibles were provided, the registrant indicates that the tests were submitted previously to support products that are now registered. Since these tests would have been found acceptable in order for those products to be registered, the reviewer finds these results to be acceptable.

The results in Table 2 for the tests in Appendix A of MRID 484963-03 are insufficient to support the ornamental and garden claims for cabbage looper, mites, aphids, whiteflies, and flea beetle. In many of these tests, details of how the tests were conducted were not provided (life stages of the insects, how plants were infested with the insects, the number of times the plants were infested, the number of insects used to infest the plants, environmental conditions during the test). The tables of results contain acronyms/abbreviations that are not defined in the report. The reviewer could not find the results for percent control of mites or aphids given in Table 1 in the data provided in Appendix A.

According to MRID 484963-03, the registrant is requesting approval of the following claims for home perimeter:

6-Month Claims:

Up to 6 month control [protection] outdoors*
Kills [controls] [protects] [for] up to 6 months outdoors*
Kills listed bugs outdoors for 6 months*
Kills listed bugs indoors and outdoors for 6 months*
*applies to spiders (excluding black widow, brown recluse, hobo)

4-Month Claims:

Up to 4 month control [protection] outdoors*
Kills [controls] [protects] [for] up to 4 months outdoors*
Kills listed bugs outdoors for 4 months*
Kills listed bugs indoors and outdoors for 4 months*
*applies to spiders (excluding black widow, brown recluse, hobo)

3-Month Claims:

Up to 3 month control [protection] outdoors*
Kills [controls] [protects] [for] up to 3 months outdoors*
Kills listed bugs outdoors for 3 months*
Keeps bugs away for up to 3 months* *for listed insects
One application keeps bugs out for 3 months*
*applies to spiders (excluding black widow, brown recluse, hobo); argentine, carpenter, fire ants; roaches/[palmetto bugs]/[water bug], scorpions, fleas, crickets, grasshoppers, pillbugs, and ticks.

The test results in Table 3 indicate that these claims are met, with the exception of the 3-month claim for scorpions. While only results, and no details, of the tests supporting these claims were provided, the registrant indicates that the tests were submitted previously to support products that are now registered. Since these tests would have been found acceptable in order for those products to be registered, the reviewer finds these results to be acceptable.

Reviewer Recommendations

The study is acceptable for the lawn claims given in MRID 484963-3, with the exception of the 3-month claim for ants. The study is acceptable for the ornamental and garden claims given in MRID 484963-03 for edibles, but not for the other plants. The study is acceptable for the perimeter claims given in MRID 484963-03, with the exception of the 3-month claim for scorpions.